Upper Extremity Direct Muscle Energy

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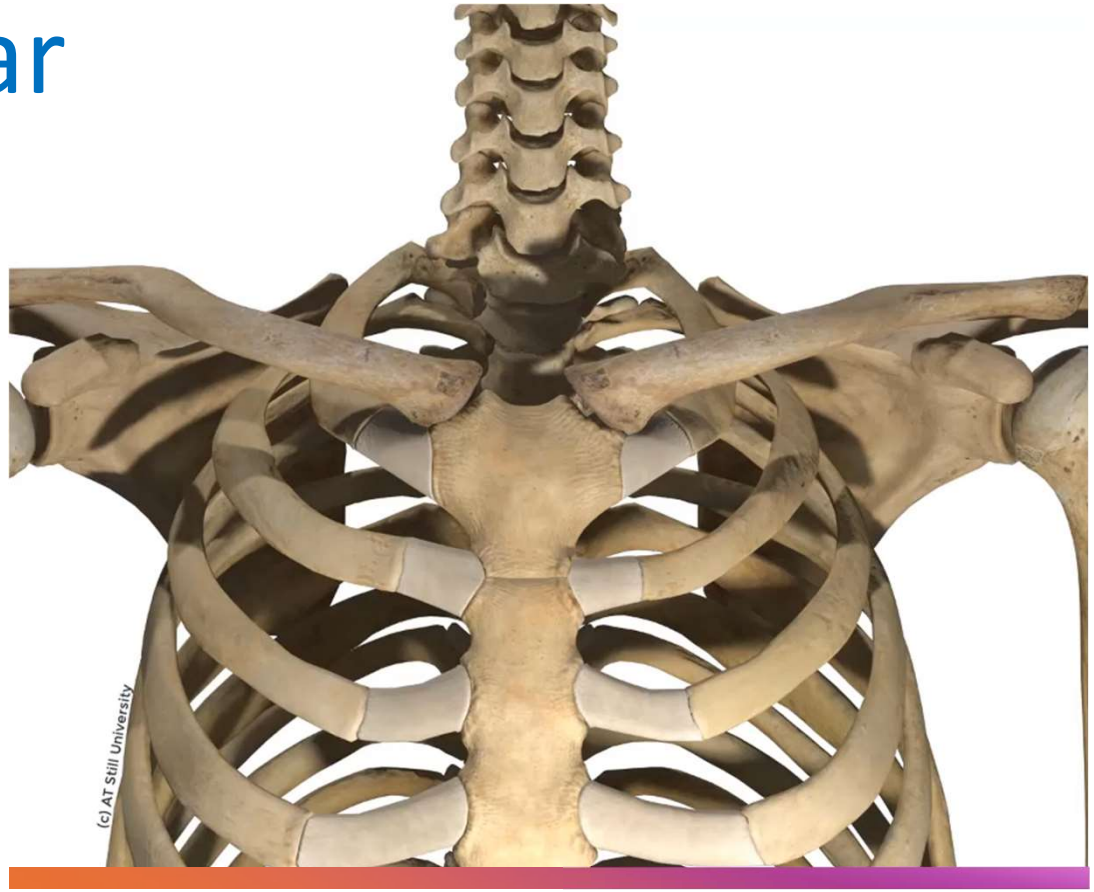
Objectives

- Perform muscle energy techniques for the:
  - **Sternoclavicular joint**
  - **Acromioclavicular joint**
  - **Glenohumeral joint**
  - **Ulnohumeral joint**
  - **Proximal radial joint**
  - **Wrist**

Sternoclavicular Joint

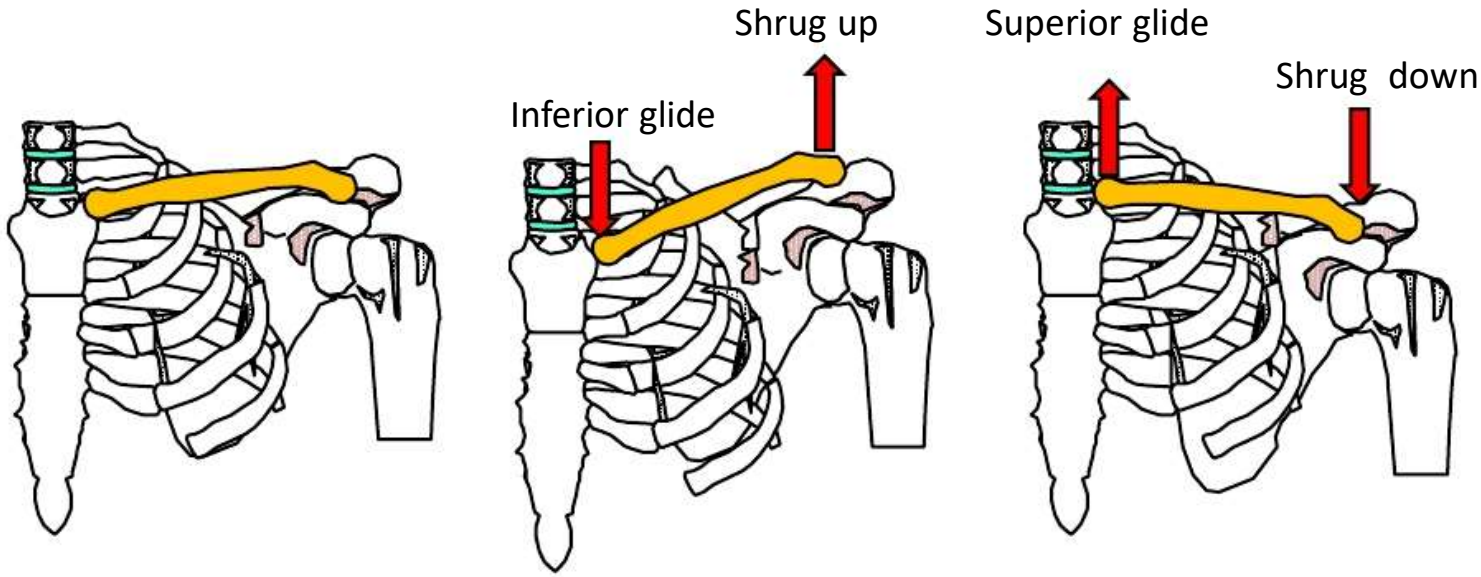
Glides of right proximal clavicle at the SC with motion

- Inferior glide with shoulder elevation (shrug)
- Superior glide with shoulder depression
- Anterior glide with shoulder retraction
- Posterior glide with shoulder protraction



SC Joint – Reciprocal Motion

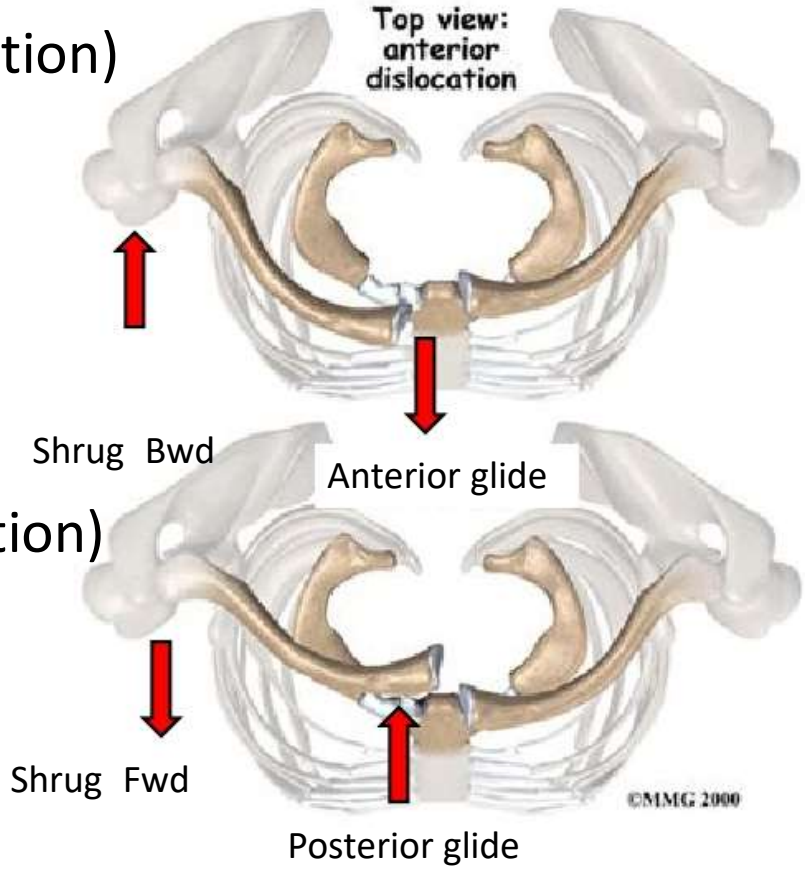
- Reciprocal motion:
  - Shrug up (elevate) causes SC to glide inferior
  - Shrug down (depress) causes SC to glide superior



"Teeter-Totter" effect

SC Joint – Reciprocal Motion

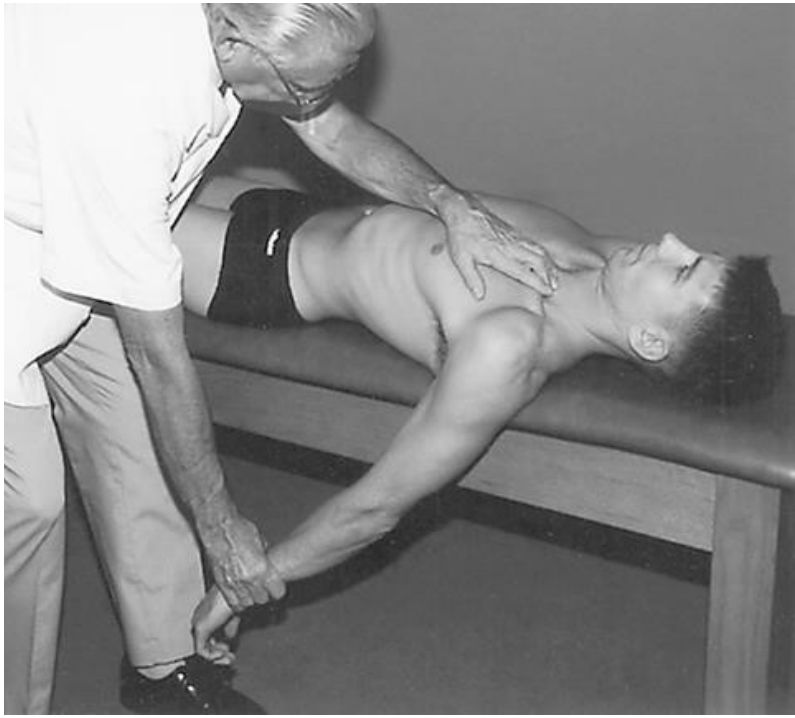
- Shrug backwards (retraction)
  - SC glides anterior
- Shrug forwards (protraction)
  - SC glides posterior



Dx: Superior clavicle at SC joint
Tx: Direct Muscle energy

The sternal end of the clavicle is superior (cephalad) and the shoulder is restricted in extension and internal rotation.

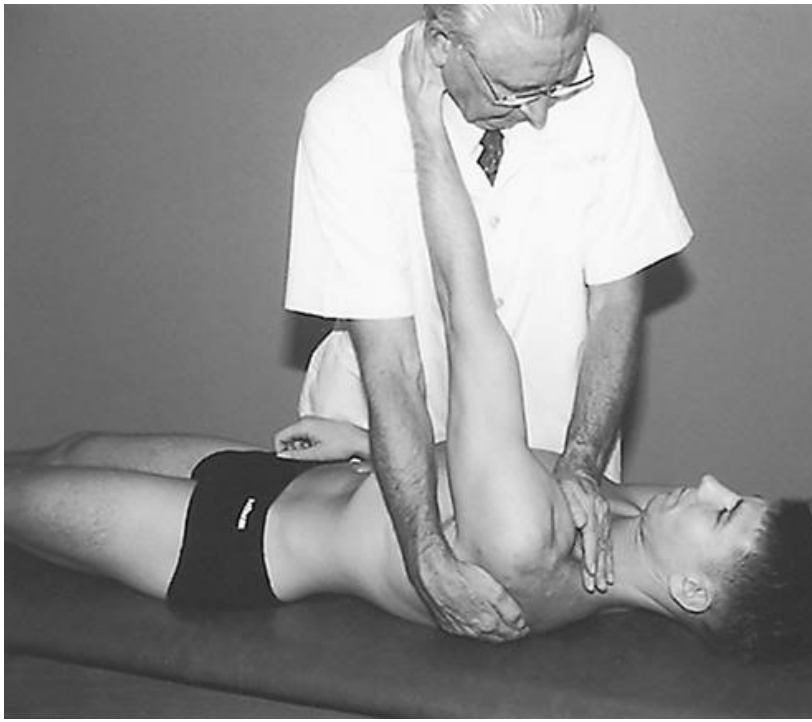
1. The physician stands on the side of the dysfunction and contacts the superior and medial end of the clavicle with the fingers and controls the patient's wrist/forearm with the other hand.
2. The physician internally rotates and extends the upper extremity to the edge of the restrictive barriers.
   Hand monitoring the SC palpates onset of tension at the barrier
3. The patient lifts the arm up toward the ceiling against unyielding counterforce for 3-5 seconds.
4. Patient relaxes, and the barrier is approached and step 3 is repeated 3-5 times.
5. Reassess



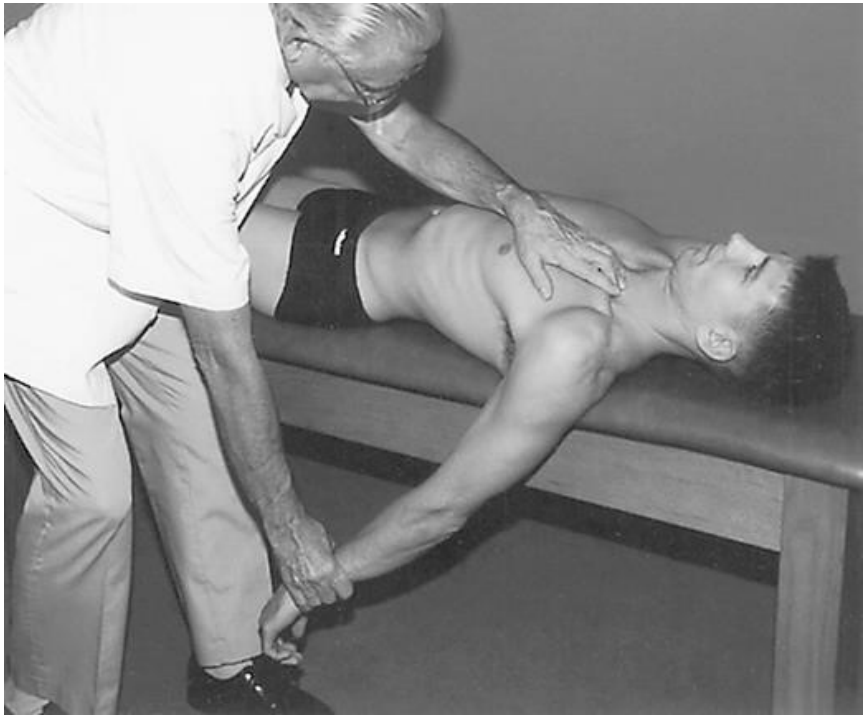
Dx: Inferior clavicle at SC joint

Tx: Direct Muscle energy

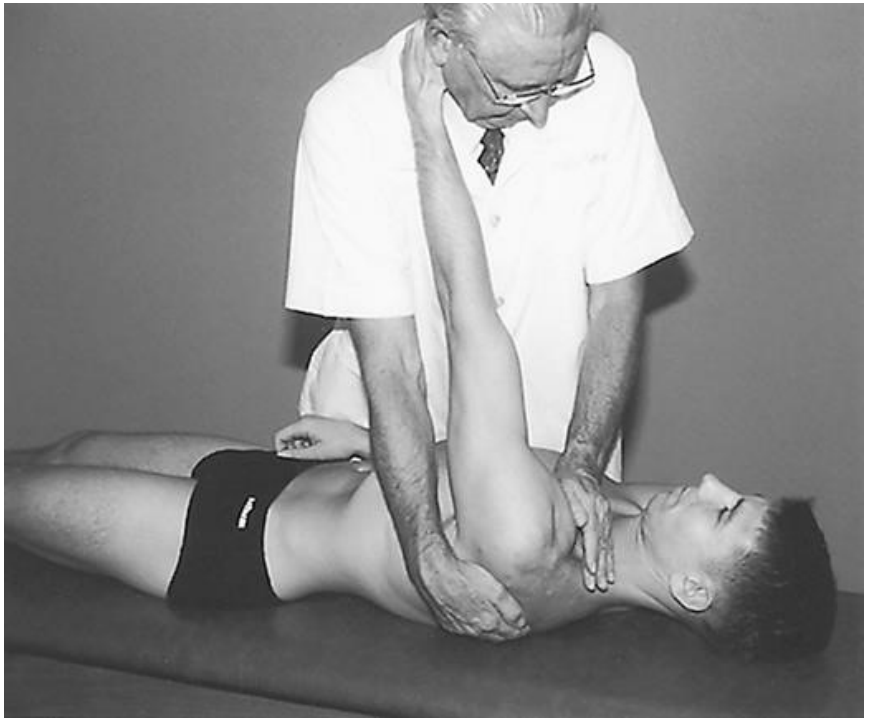
1. Place thenar eminence over the inferior SC joint, caudad hand contacts the medial border of the patient's scapula.
2. Instruct patient to grasp the back of the physician's neck.
3. Stand erect to engage the edge of the flexion barrier.
4. Have patient very lightly pull down on physician's neck against the physician maintains upright posture and resists scapular retraction to maintain counterforce and held for 3-5 seconds.
5. The clavicular hand is gliding the scapula further superior to the barrier.
6. After patient relaxes, approach barrier pull the scapula into further protraction while gliding the clavicle further superiorly and repeat 3-5 times.
7. Recheck for improvement of motion



Dx: Superior clavicle (SC) Direct Muscle Energy



Dx: Inferior clavicle (SC) Direct Muscle Energy



AC Joint - Roughly Equivalent Terms

- Posterior
- Superior
- **Externally Rotated**
- Abduction

- Anterior
- Inferior
- **Internally Rotated**
- A**D**duction

AIID

If you're really into it...

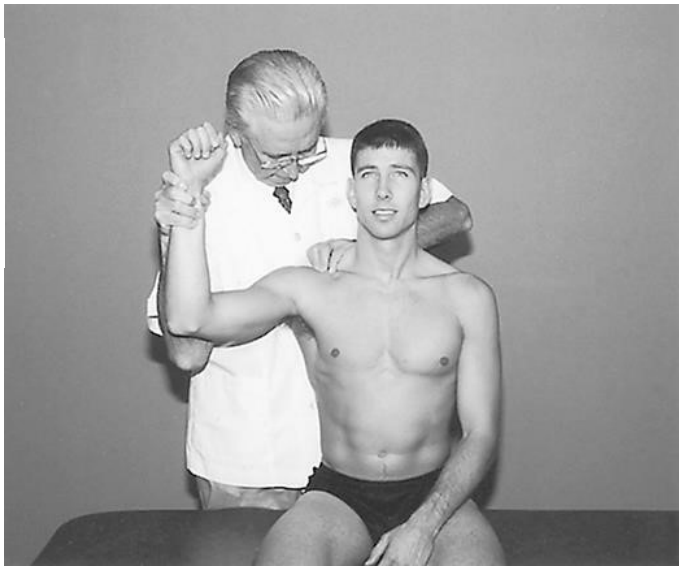
Here's a Framework for Interpreting Directional Terms of the clavicle Using ISB Terminology

(International Society of Biomechanics)

Term	At the SC joint	At the AC joint	Key distinction
Posterior	Clavicle retracts (moves backward on thorax)	**Scapula tilts posteriorly relative to clavicle; or clavicle translates posteriorly on scapula**	SC: clavicle moves on fixed thorax; AC: scapula moves on fixed clavicle (or vice versa)
Anterior	**Clavicle protracts (moves forward on thorax)**	Scapula tilts anteriorly relative to clavicle	SC motion is thorax-relative; AC motion is clavicle-relative
Superior	Clavicle elevates (moves up on thorax)	**Scapula displaces superiorly relative to clavicle; or joint distracts**	SC: elevation is limited by costoclavicular ligament; AC: superior displacement indicates instability
Inferior	**Clavicle depresses (moves down on thorax)**	Scapula displaces inferiorly relative to clavicle	SC depression is minimal; AC inferior displacement is common in grade III–V injuries
External rotation	Clavicle rotates posteriorly around its long axis	**Scapula externally rotates relative to clavicle (lateral rotation)**	SC: long-axis rotation of clavicle; AC: rotation of scapula in transverse plane
Internal rotation	**Clavicle rotates anteriorly around its long axis**	Scapula internally rotates relative to clavicle (medial rotation)	SC: opposite of posterior rotation; AC: scapula moves anteriorly on thorax
Abduction	Not typically used for SC joint	**Arm abduction drives scapular upward rotation; scapula abducts from thorax**	SC: protraction/elevation occur with arm abduction; AC: upward rotation is coupled motion
Adduction	**Not typically used for SC joint**	Arm adduction drives scapular downward rotation; scapula adducts toward thorax	SC: retraction/depression occur with arm lowering; AC: downward rotation is coupled motion

Right Superior Clavicle Acromioclavicular Dysfunction

Tx: Muscle energy (Direct)

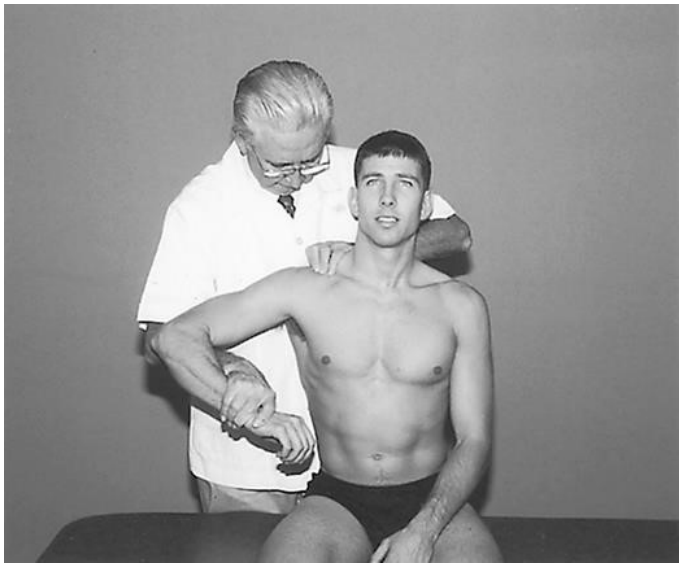


1. The patient sits on the table or stool with the operator standing behind them.
2. The operator's medial hand stabilizes the lateral aspect of the clavicle and monitors the acromioclavicular joint.
3. The operator takes the upper extremity to 30° of horizontal flexion and abduction to 90°.
4. The external rotational barrier is engaged with the operator's lateral hand grasping the patient's wrist and placing their forearm vertical against the patient's forearm
5. The patient provides muscle contraction for 3 to 5 seconds for 3 to 5 repetitions against resistance.
6. The operator engages a new barrier after each muscle contraction.
7. Retest.

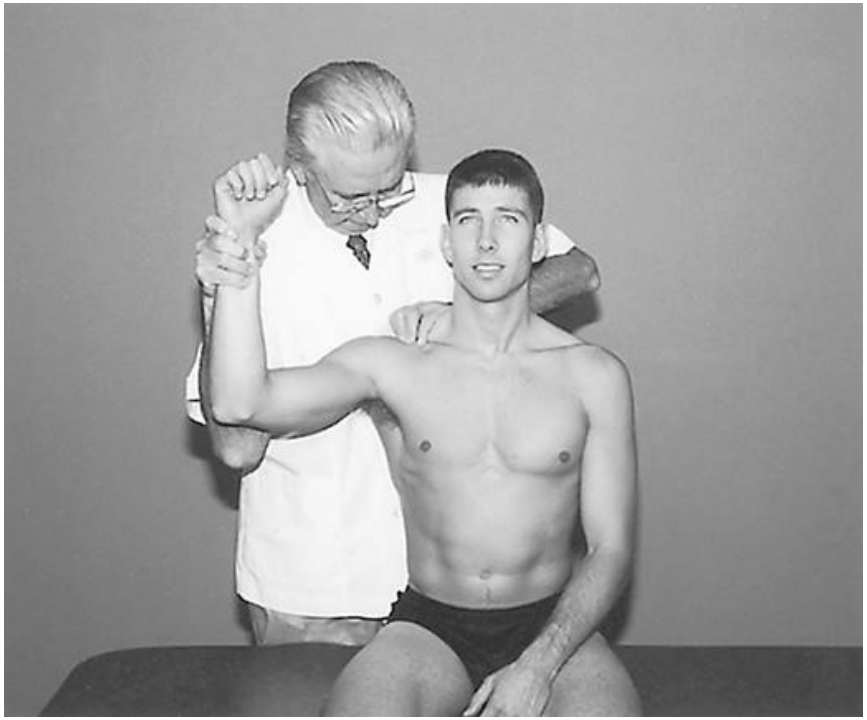
Dx: Right Inferior Clavicle Acromioclavicular Dysfunction

Tx: Muscle energy External rotation/superior

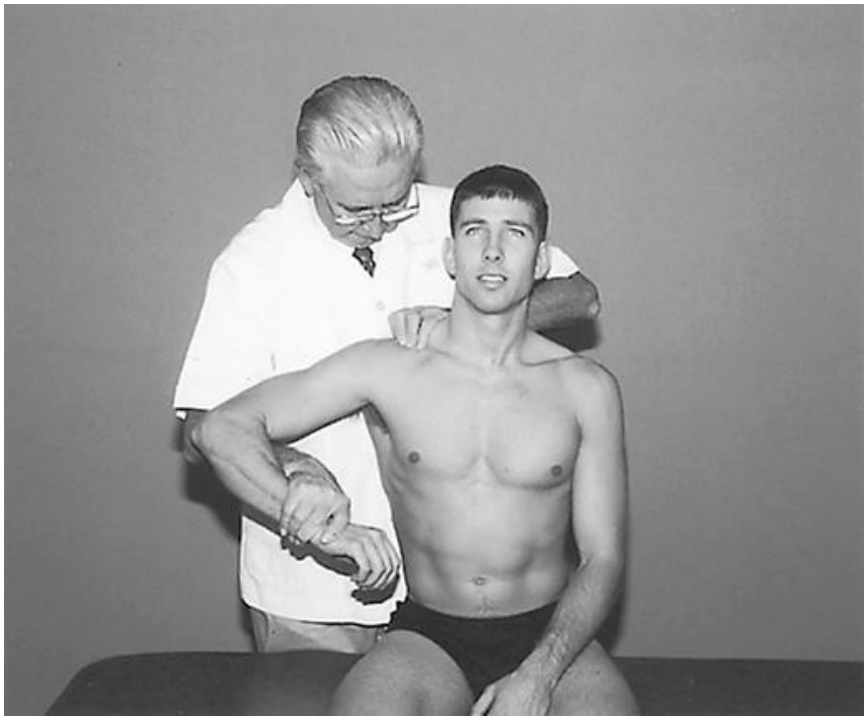
1. The patient sits on the table or stool with the operator standing behind them.
2. The operator's medial hand stabilizes the lateral aspect of the clavicle and monitors the acromioclavicular joint.
3. The operator takes the upper extremity to 30° of horizontal flexion and abduction to 90°.
4. The operator engages the internal rotation barrier by threading the lateral forearm under the patient's elbow and grasping the distal forearm.
5. The patient attempts to rotate the wrist vertically against physician counterforce for 3 to 5 seconds and 3 to 5 repetitions.
6. The operator engages a new barrier after each muscle contraction.
7. Retest.



External Rotation /Superior Treatment



Internal Rotation/ Inferior Treatment



7 Stages of Spencer:
Lateral Recumbent, Direct ME, or Articulatory

- Treatment for GH Joint, Shoulder Muscle Restriction, Adhesive Capsulitis
- Sequence as follows:

1. Extension
2. Flexion
3. Circumduction with Compression
4. Circumduction with Traction
5. ABduction
    - *ADduction and External Rotation are left out of the traditional 7 Stages of Spencer*
6. Internal Rotation
7. Joint Pump

7 Stages of Spencer - GH Joint

•Setup: Must hold scapula and clavicle to localized GH

Caution: The physician's counterforce arm should be braced on his/her hip or the patient's body, whenever possible and in every stage, to avoid sudden or excessive motion.

Seven Stages of Spencer

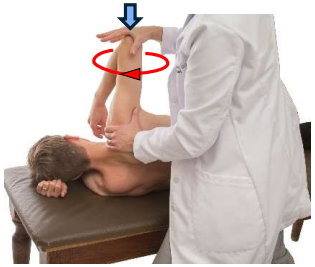
(Add muscle Energy)

- **Stage 1 (extension):** flex elbow and extend shoulder to myofascial barrier
- **Stage 2 (flexion):** with elbow flexed, maintain external rotation and flex the shoulder to myofascial barrier
    - Art TQ: Spring on restrictive barrier
    - ME TQ: Instruct patient to flex the shoulder against counterforce for 3-5 seconds, relax 1-2 seconds, reposition at the new restrictive barrier, and repeat 3-5 times
- **Stage 3 (circumduction with compression):** flex elbow and abduct shoulder to 90°. Apply a small amount of pressure through elbow to **compress** the head of the humerus into glenoid fossa. Circumduct elbow in clockwise and counterclockwise circles, first small then gradually increasing in diameter.

Stage 1

Stage 2

Stage 3



Stage 4 (circumduction with traction): with shoulder abducted 90° and elbow extended, apply lateral **traction** on shoulder. Circumduct arm in clockwise and counterclockwise circles, first small then increasing in diameter.

Stage 5 (abduction): with elbow flexed, abduct shoulder to myofascial barrier.

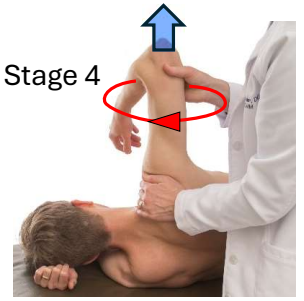
- Art TQ: Spring on restrictive barrier
- ME TQ: Instruct patient to adduct the shoulder against counterforce for 3-5 seconds, relax 1-2 seconds, reposition at the new restrictive barrier, and repeat 3-5 times

Stage 6 (internal rotation): with elbow flexed, internally rotate the shoulder to myofascial barrier.

- Art TQ: Spring on restrictive barrier
- ME TQ: Instruct patient to push elbow posteriorly (Gently) against counterforce for 3-5 seconds, relax 1-2 seconds, reposition at the new restrictive barrier, and repeat 3-5 times

Stage 7 (joint pump): with shoulder abducted 90° and elbow extended or flexed, apply a gentle repetitive myofascial pump on the shoulder capsule. Apply the pumping stretch on the anterior, lateral, and posterior capsule. *This distracts joint and enhances lymphatic drainage.*

Stage 4



Stage 5

Stage 6

Stage 7

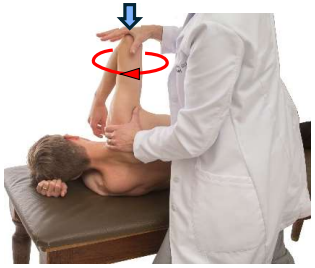
Seven Stages of Spencer

- Stage 1 (extension)
- Stage 2 (flexion)
- Stage 3 (circumduction with compression)
- Stage 4 (circumduction with traction)
- Stage 5 (abduction)
- Stage 6 (internal rotation)
- Stage 7 (joint pump)

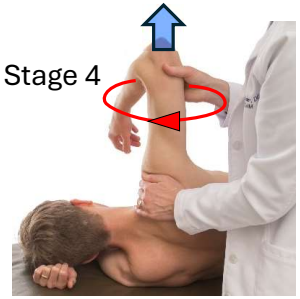
Stage 1

Stage 2

Stage 3



Stage 4



Stage 5

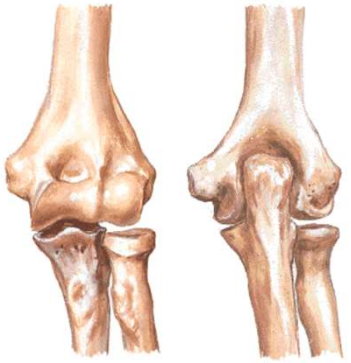
Stage 6

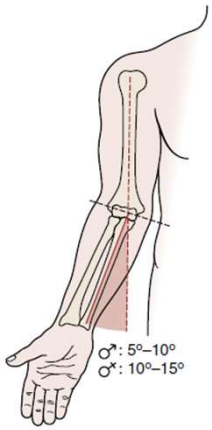
Stage 7

Ulnohumeral (UH) Joint

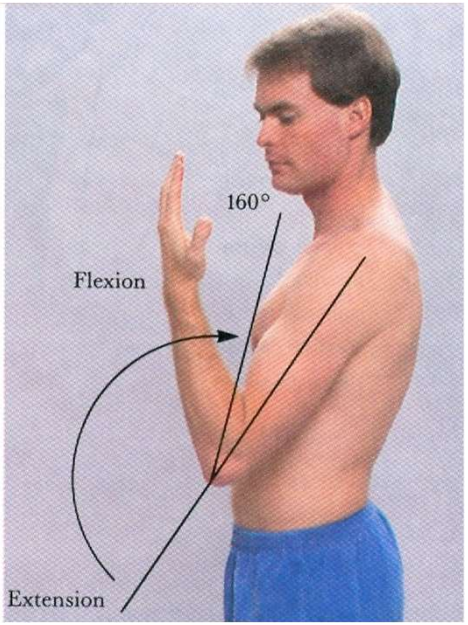
- **True elbow joint**
- **Grooved spiral in joint allows hand to move to mouth (trochlear joint)**
- **Groove produces carrying angle:**
  - **5-10 deg - male**
  - **10-15 deg – female**

- **Elbow range of motion:**
  - **140-150 deg Flex.**
  - **0 deg Ext.**
  - **(Hyperextension 10-15°)**





A Normal carrying angle



Dx: Ulnar ABduction with Medial Glide

Tx: Direct Muscle energy

<u>TX:</u> Ulnohumeral Muscle Energy

1. Grasps patient's distal forearm; other hand: thumb/thenar eminence puts pressure on **medial** side of olecranon
2. Extend patient's elbow (maintain slight flexion)
3. Instruct patient to flex elbow against physician isometric resistance 3-5 seconds
4. Approach the barrier w/ both hands and repeat 3-5 times.

Caution: Take care not to overextend the UH joint.

Dx: Ulnar ADduction with lateral glide

Tx: Direct Muscle Energy

1. Grasps patient's distal forearm; other hand: thumb/thenar eminence puts pressure on **lateral** side of olecranon
2. Extend patient's elbow (maintain slight flexion), instruct patient to flex elbow against physician isometric resistance 3-5 seconds
3. Approach the barrier w/ both hands and repeat 3-5 times.

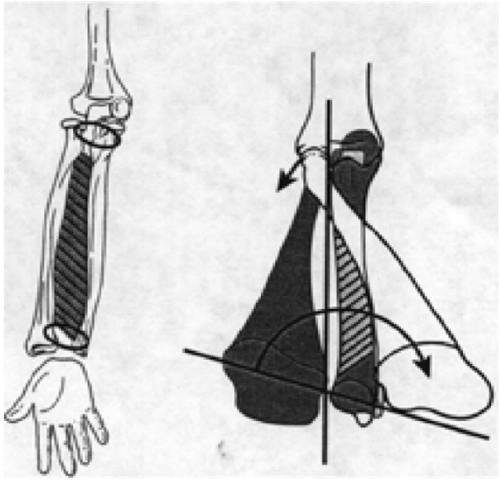
Caution: Take care not to overextend the UH joint.

Dx: Abduction
Direct Muscle Energy

Dx: Adduction
Direct Muscle Energy

Radius Motion & Radial Head Somatic Dysfunction

- Reciprocal motion of radial head (proximal radius) relative to distal radius
- Pronated hand:
  - –At full pronation, radial head glides posterior
  - –Distal end of radius moves anteriorly
- Supinated hand:
  - –At full supination, radial head glides anterior
  - –Distal end of radius moves posterior



Dx: Right radial head posterior (pronated)

Tx: Direct muscle energy

1. Grip patient's hand w/ finger over distal radius
2. Apply anterior pressure with thumb on proximal radial head while applying posterior pressure with fingers over distal radius
3. Extend elbow to almost full extension, then supinate to barrier
4. Patient turns hand over against resistance for 3-5 seconds and repeat 3-5 times
5. Recheck

Dx: Right radial head anterior (supinated)

Tx: Direct muscle energy

1. Grab patient's distal forearm and pronate to barrier
2. Apply posterior pressure on radial head with thumb
3. Have patient extend and supinate arm against instruct patient to flex elbow against physician isometric resistance 3-5 seconds
4. Repeat 3-5 times
5. Recheck

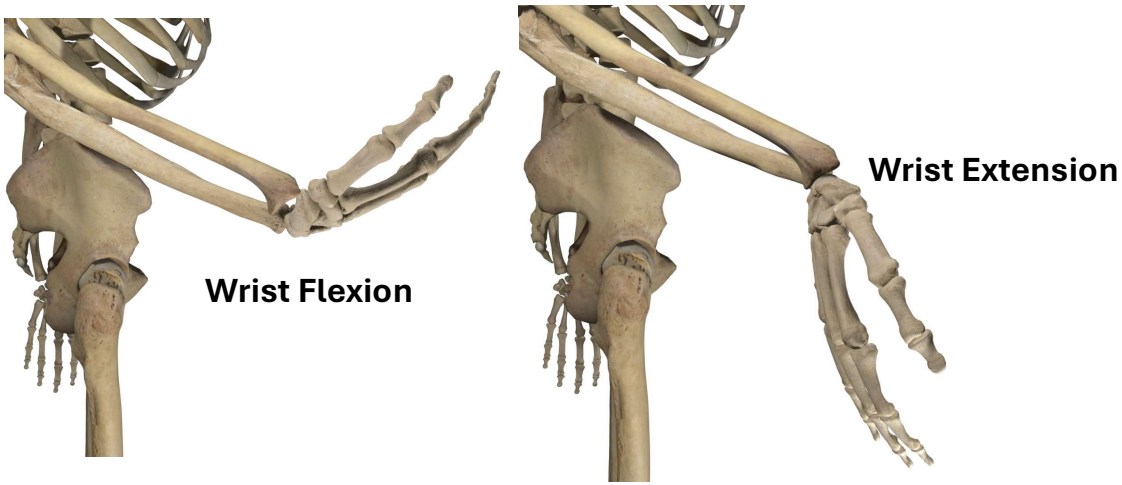
- (Caution: Take care not to stress the ulnohumeral joint during flexion)

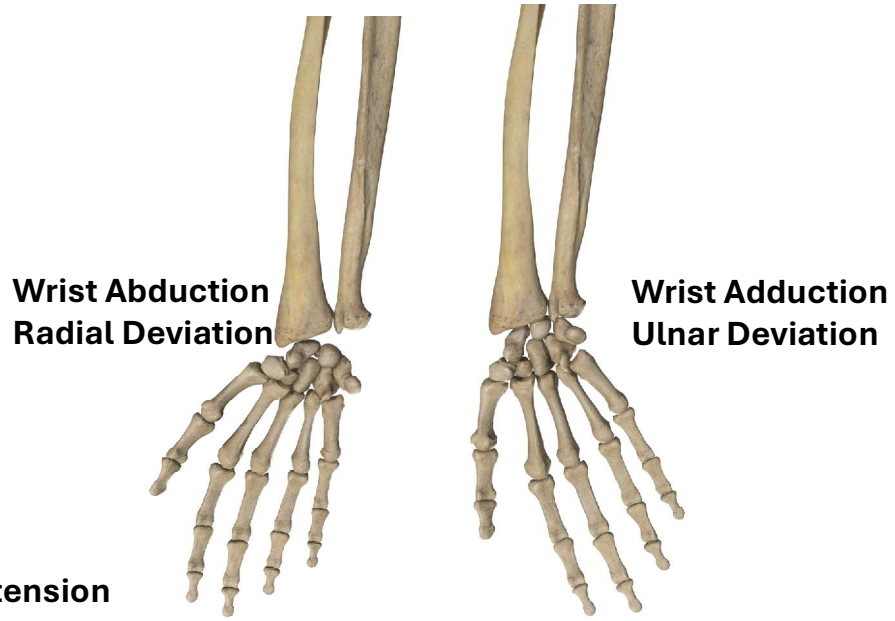
Dx: Radial Head Posterior Direct Muscle Energy

Dx: Radial Head Anterior Direct Muscle Energy

Wrist Screening – Active ROM

- Normal Range of Motion
  - Flexion 40°
  - Extension 40°
  - Abduction (radial deviation) 15°
  - Adduction (ulnar deviation) 20-30°





Radiocarpal Assessment – Passive ROM

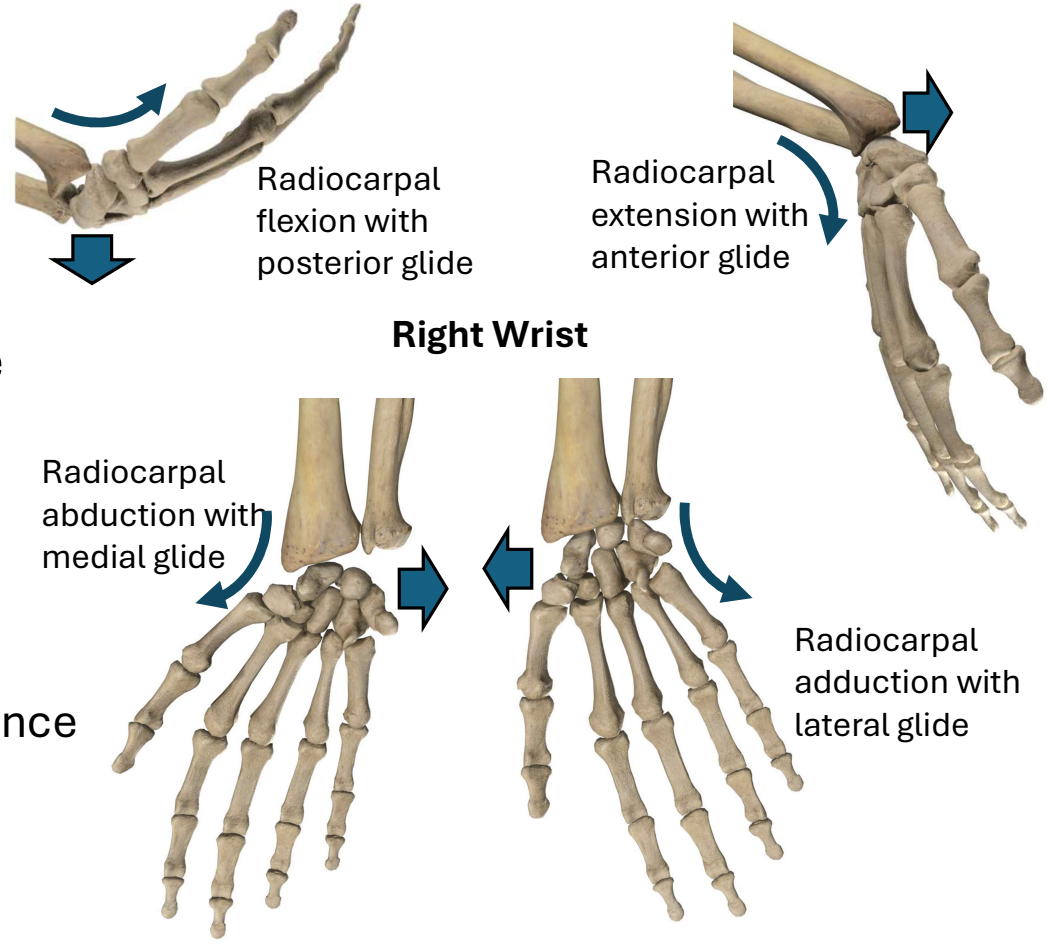
Articular Somatic Dysfunction Assessment

Passive motion assessment

1. Flexion with posterior glide
2. Extension with anterior glide
3. Adduction with lateral glide
4. Abduction with medial glide

*Note the motion restriction

Named for direction of motion preference



Exercise (Yoga) Induced Radiocarpal Dysfunction

- Common complaint among yoga participants
- Hyperextension of the radiocarpal joint with weight

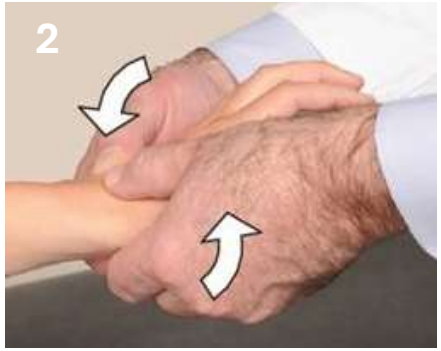
- Treatment:
  - OMT, treat radiocarpal dysfunctions
  - Adjust positions that utilize wrist extension
    - Add props
    - Straighten wrists
  - Strengthen wrists and hands

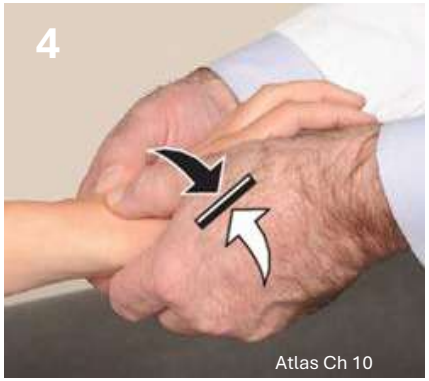
Dx: Radiocarpal Dysfunction

Tx: Direct Muscle Energy

1. Physician positions joint to the edge of the restrictive barrier
    1. Flexion, extension, abduction, or adduction
2. Physician instructs the patient to press hand toward the direction of ease (away from restriction) while the physician applies an unyielding counterforce for 3-5 seconds
3. Patient is instructed to relax
4. Once the patient has completely relaxed, the physician positions the patient's wrist to the edge of the new restrictive barrier
    1. Further into Flexion, extension, abduction, or adduction
5. Repeat 3-5 times or until motion is maximally improved at the dysfunctional wrist
6. Reassess

**This treatment can be used for any wrist SD by changing the direction of initial setup, patient force direction, and counterforce





Radiocarpal Dysfunction

- Dx: Dorsiflexion

Direct Muscle Energy

- Dx: Palmar Flexion

Direct Muscle Energy

- Dx: Supinated

Direct Muscle Energy

- Dx: Pronated

Direct Muscle Energy

Muscle Energy can be used for treatment of any wrist somatic dysfunction at the radiocarpal joint

Technique	Radiocarpal or carpal diagnosis				
		Flexion with Posterior Glide	**Extension with Anterior Glide**	**Abduction with Medial Glide**	**Adduction with Lateral Glide**
Muscle Energy	**Initial Setup**	Wrist Extension	Wrist Flexion	Wrist Adduction	Wrist Abduction
	Direction of Patient's Counterforce	Wrist Flexion	Wrist Extension	Wrist Abduction	Wrist Adduction

Reference slide

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